

ABSTRACT OF THE DISCLOSURE

Silicon precursors for forming silicon films. Hexacoordinated silicon beta-diketonate compositions are described, of the formula $R_2Si(-diketonate)_2$ or $(RO)_2Si(\beta-diketonate)_2$, wherein each R is the same as or different from the other R, and each R is independently selected from H, aryl, fluoroaryl, $C_1 - C_{12}$ alkyl, $C_1 - C_{12}$ fluoroalkyl and $C_1 - C_{12}$ silicon-containing alkyl. The precursors are compatible with dopant co-precursors such as transition metal β -diketonate coordination complexes. The compositions enable low temperature (e.g., $<600^\circ\text{C}$) formation of gate dielectrics, capacitor films, etc., in the fabrication of VLSI microelectronic devices.

10

15